TECH FOR GOOD INSTITUTE

Compendium

Guide to Data Sources For Financial Inclusion Research

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About this Study

As the digital economy continues to transform the way we work and live, ongoing research to understand its impact on society and the economy is vital to enable sustainable, inclusive and equitable growth. Sound research, however, relies on good data that are comprehensive, timely and accurate. To encourage robust research across disciplines, the Tech for Good Institute is releasing a compendium of data sources for key topics of inquiry in the digital economy. While the series is not meant to be exhaustive of all available data sources, it is a good starting point for researchers, policymakers, and stakeholders who are interested in the intersection of policy and technology.

About the Author

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- The author would also like to thank the Digital Planet research team at The Fletcher School, Tufts University, for providing the Digital Intelligence Index dataset and the Cambridge Centre for Alternative Finance for allowing us to cite and show the screenshot for the Global Fintech Ecosystem Atlas.
- This study is funded by TFGI's founding donor, Grab. We are grateful to Grab for supporting TFGI's mission of leveraging the promise of technology and the digital economy for inclusive, equitable, and sustainable growth in Southeast Asia. The views expressed in this study are those of the author and should not be attributed to TFGI, its advisors, directors, or funders. Funders do not determine research findings nor the insights and recommendations of research.

About the Tech for Good Institute

The Tech for Good Institute is a non-profit organisation working to advance the promise of technology and the digital economy for inclusive, equitable and sustainable growth in Southeast Asia. With a population twice the size of the US and strong demographics, Southeast Asia's digital economy is evolving rapidly. At the same time, the region's trajectory will be unique, shaped by its diverse cultural, social, political, and economic contexts. The Tech for Good Institute serves as a platform for research, conversations and collaborations focused on Southeast Asia but connected to the rest of the world. Our work is centred on issues at the intersection of technology, society, and the economy, and that are intrinsically linked to the region's development. We seek to understand and inform policy with rigor, balance and perspective, through research, effective outreach and evidence-based recommendations.

The Institute was founded by Grab, Southeast Asia's leading superapp, to advance the vision of a thriving, innovative Southeast Asia for all. We welcome opportunities for partnership and support, financial or in-kind, from organisations and individuals committed to fostering responsible innovation and digital progress for sustainable growth in the region. More information about the Institute can be accessed at www.techforgoodinstitute.org.

Chapter 1

Introduction

Financial technology (fintech) has the power to transform finance and transform lives. The size and scope of fintech activities have grown rapidly and these new activities have far-reaching consequences for the private sector and policymakers. Understanding and monitoring the rapidly changing fintech landscape is important. Similarly, financial inclusion is a key pillar of the G20 global development agenda. To monitor the progress towards financial inclusion, data is key.

Introduction

Data on both fintech and financial inclusion is available but fragmented. The challenge is that data sources for financial inclusion and fintech have become richer yet more complicated to navigate. Some of these data sources (especially in the fintech space) are limited in coverage and many are conducted on a one-off basis and hard to compare over time. When choosing a database, it is important to consider the reliability, timeliness, and consistency of the data across countries especially if you are doing cross-country comparisons.

With these considerations in mind, this compendium aims to raise awareness of a few global databases that are available for public use in the areas of financial inclusion and fintech. This paper is meant to guide users to navigate the dizzying landscape of data sources out there.

Ultimately, there is no single “best source”, what you need depends on your purpose.

This guide is meant for analysts, researchers, policymakers and anyone interested in financial inclusion and fintech. The databases highlighted in this guide are chosen based on a few criteria: big sample size, balanced geographical cover (including SEA countries), availability over more than one time period, and availability to the public. The list here is not meant to be exhaustive. There are many private data sources that are not readily available or are more limited in sample size and scope and may only be available at a point in time.

For those interested in understanding and monitoring the digital financial services landscape in Southeast Asia (SEA), this guide helps answer questions such as:

- What is the degree of digital adoption in SEA?
- What is the internet penetration in SEA?
- How many people are unbanked?
- Which country has the largest payments volume in SEA?
- Which country has the largest gap in digital adoption between female and male (the digital gender gap)?

Chapter 2

Data Sources

This guide identifies five global databases that can be useful in financial inclusion research. Specifically, this includes two global databases: (A) Global Findex; (B) Financial Access Survey; two indices: (C) Digital Adoption Index; (D) Digital Intelligence Index; and one digital gender gap database: (E) Digital Gender Gap. Each of these databases are discussed in detail in this chapter, including their geographical coverage, frequency, methodology, and focus.

Table 1. Summary Table of Databases

	Global Findex (A)	Financial Access Survey (B)	Digital Adoption Index (C)	Digital Intelligence Index (D)	Digital Gender Database (E)
Source	World Bank	IMF	World Bank	Fletcher School and Mastercard	Oxford University
Coverage	140 countries	189 countries	180 countries	90 countries	193 countries
Time Period	2011/2014/ 2017/ 2021	Launched since 2009	2014 and 2016 (latest year available)	2008 to 2019	2018 to latest available (2022 July)
Frequency	Compiled every 3 years	Annual (latest available:2022)	Two observations available for each country	Annual (latest available: 2019)	Monthly since 2018
No. of Variables	300 indicators	121 indicators (with 70 indicators normalised relative to size of adult population, land area, GDP)	The index is a simple average of 16 indicators over 3 sub-indices (Government, People, Businesses).	Aggregates 160 different indicators into four key drivers: supply conditions, demand conditions, institutional environment, and innovation and change. Also contains the Digital Divides and Momentum scores.	Two measures of gender gap: (1) Internet gender gap (2) Mobile gender gap For each measure, three estimates from different sources are provided.

Table 1. Summary Table of Databases

	Global Findex (A)	Financial Access Survey (B)	Digital Adoption Index (C)	Digital Intelligence Index (D)	Digital Gender Database (E)
Level of Disaggregation	Each indicator is available by gender, income, rural and urban, working age population	Data is disaggregated by types of financial service provider (e.g. commercial banks, credit unions, microfinance institutions) and type of financial services e.g. deposits, loans) Mobile money data is available since 2014 and gender-disaggregated data available since 2017.	There are 16 indicators used to construct the overall index	By country and by indicators (see interactive dashboard)	None
Usage	To track progress towards financial inclusion, for global trend analysis and cross-country comparison. The drawback is that the data is not sub-nationally representative, which means that it is less useful for in-country policymakers and their decision-making as there is just not sufficient granularity.	To track progress towards financial inclusion and cross-country comparison. Like the Global Findex, it is not sub-nationally representative, and the data is dependent on countries' ability to capture data from financial service providers.	Provides a supply-side benchmark, to help policymakers design digital strategies to promote digital adoption across different user groups.	Interactive dashboard allows researchers to track, analyse and compare the current state and pace of digitalization. It can also drill down to the four different drivers, supply, demand, institutional environment and innovation.	Interactive dashboard allows downloading of data by month. And visualisation on the world map shows which countries are lagging behind in the digital gender gap. a

Table 1. Summary Table of Databases

	Global Findex (A)	Financial Access Survey (B)	Digital Adoption Index (C)	Digital Intelligence Index (D)	Digital Gender Database (E)
Special Focus	Since 2017, updated indicators on access to and use of formal and informal financial services and include usage of fintech (such as mobile phones, digital payments)	Supply side indicators on access to and use of financial services.	Focus on the supply-side of adoption of digital financial services.	Holistic coverage of not just demand and supply side indicators but highlights the role of the enabling environment and degree of innovation and change in the environment.	Gender Gap
Link	https://www.world-bank.org/en/publica-tion/globalfindex	https://data.imf.org/?sk=E5DCAB7E-A5CA-4892-A6EA-598B5463A34C	https://www.worldbank.org/en/publication/wdr2016/Digital-Adoption-Index	https://digitalintelligence.fletcher.tufts.edu/trajectory	https://www.digitalgendergaps.org/
Visualisation	https://www.world-bank.org/en/publica-tion/globalfindex/interac-tive-executive-summary-visualization	NA	NA	https://digitalintelligence.fletcher.tufts.edu/trajectory	https://www.digitalgendergaps.org/

The Global Findex is a widely used and comprehensive dataset on how adults save, borrow, make payments and manage risk.

A. Global Findex Database

The Global Findex indicators measure the use of financial services, which is distinct from access to financial services. Access most often refers to the supply of services (this is covered by the Financial Access Survey), while use is determined by demand as well as supply. Use refers to the levels and patterns of use of different financial services among different groups, such as poor people, youth, and women.

The Global Findex is a widely used and comprehensive dataset on how adults save, borrow, make payments and manage risk. Drawing on survey data collected in collaboration with Gallup, Inc., the Global Findex database covers more than 140 economies around the world and surveys 150,000 adults over the age of 15 years old. Due to its large-scale nature, the survey is available only every three years, starting from 2011.

It provides almost 300 indicators on topics such as account ownership, payments, saving, credit, and financial resilience. It is reported for all indicators by country, region, and income group. Data is also summarised by gender, income (adults living in the richest 60% and poorest 40% of households), labour force participation (adults in and out of the workforce), age (young and older adults), and rural and urban residence.

Of interest is the Global Findex 2021 survey which was conducted during the COVID-19 pandemic. The pandemic accelerated the adoption of digital financial services across the world and improved financial inclusion. This is nicely captured in Global Findex 2021: Interactive Executive Summary Visualisation.

B. Financial Access Survey

The Financial Access Survey (FAS) is the most comprehensive global supply-side data on financial inclusion. It contains annual data for 189 countries over more than 15 years and contains 121 time-series on financial access and use. Similar to the Global Findex's cross-country comparison for demand-side data, the International Monetary Fund FAS provides the same functionality but for supply-side data. It is the only dataset in the world with country-level data on mobile money and includes gender statistics on the use of basic financial services. Mobile money data has been available since 2014 and gender-disaggregated data is available since 2017. To facilitate cross-country comparisons, it publishes 70 indicators that are normalised to the size of adult population, land area and gross domestic product (e.g. no. of ATMs per 100,000 adults). The data is disaggregated by the type of financial service provider (e.g. commercial banks, credit unions and microfinance institutions.)

In addition, two FAS indicators (number of commercial bank branches and automated teller machines) have been used to monitor the achievement of Target 8.10 of the 2030 UN Sustainable Development Goals[1].

The FAS has an API that makes data easily downloadable: Financial Access Survey - IMF Data

[1] Target 8.10 aims to strengthen the capacity of domestic financial institutions to expand access to banking and financial services.

The FAS is one of the main data sources for the G20 Financial Inclusion Indicators endorsed by the G20 Leaders. These include:

- Number of ATMs per 100,000 adults
- Number of commercial bank branches per 100,000 adults
- Number of mobile money transactions per 100,000 adults
- Number of deposit accounts at commercial banks per 1,000 adults
- Number of life insurance policy holders per 1,000 adults
- Number of non-life insurance policy holders per 1,000 adults
- Deposit accounts of SMEs at commercial bank (as % of non-financial corporations)
- Loan accounts of SMEs at commercial banks (as % of non-financial corporations)
- Number of registered mobile money agent outlets per 100,000 adults
- Number of loan accounts with commercial banks per 1,000 adults

C. Digital Adoption Index

The Digital Adoption Index (DAI) is a composite index measuring the degree of spread of digital technologies within and across countries. It is calculated using three sectoral sub-indices covering businesses, people, and governments, with each sub-index given an equal weight.

There are two advantages of the DAI. First, it has a wider coverage than existing indices. It reflects the extent to which digital technologies are available and adopted by all the key agents in an economy: business, people and governments. Second, it is constructed mostly from World Bank's internal databases, which is likely to be more robust than those based on perception surveys. It is meant to serve as a benchmark for policymakers to measure the "supply side" of the digital economy.

Originally constructed as part of the World Development Report 2016: Digital Dividends, the DAI has been updated to reflect new data sources and an improved methodology. It is only available for two years, 2014 and 2016.

For more information on the 16 indicators and its sources, see Digital Adoption Index (DAI).

DAI Formula

DAI (Economy) = DAI (Businesses) + DAI (People) + DAI (Governments)

where:

DAI (Business): The Business cluster is the simple average of four normalized indicators: the percentage of businesses with websites, number of secure servers, download speed, and 3G coverage in the country.

DAI (People): The People cluster is the simple average of two normalized indicators from the Gallup World Poll: mobile access and internet access at home.

DAI (Governments): The Government cluster is the simple average of three sub-indices: core administrative systems, online public services, and digital identification.

D. Digital Intelligence Index[2]

The Digital Intelligence Index (DII) charts the progress of economies in advancing digitalization, fostering trust and enabling financial inclusion. It covers 90 economies over a twelve-year period. The DII provides insights from two scorecards: the Digital Evolution scorecard and the Digital Trust scorecard.

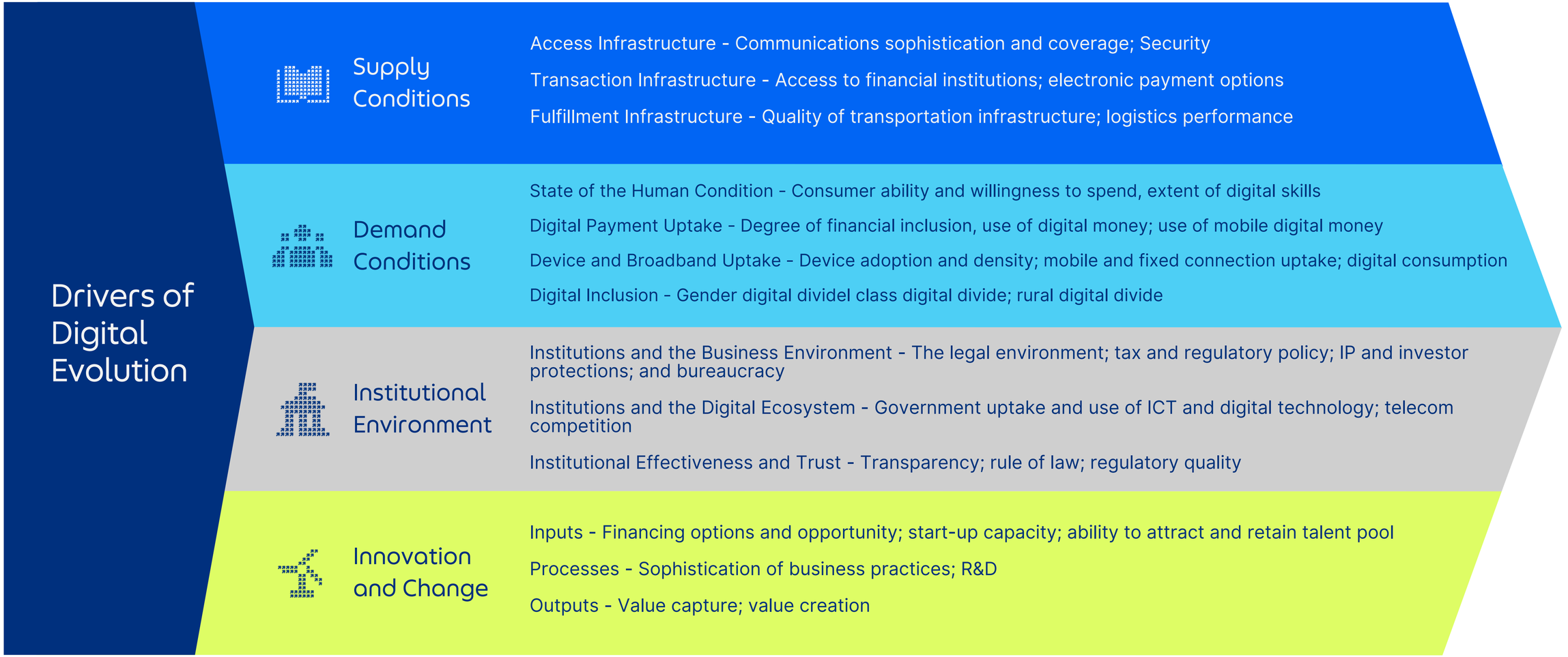
For the **Digital Evolution** scorecard, the central hypothesis is that digitalisation of an economy is governed by four drivers of equal importance: supply conditions, demand conditions, institutional environment, and innovation and change.

To create a composite picture of the digital economy, the Digital Evolution Index tracks a total of 160 indicators to measure the current state and pace of digitalisation. It is structured at four levels: indicators, clusters, components, and drivers. Indicators are standardised data points that answer a specific question. They are aggregated into clusters which illuminate 35 aspects of digitalisation and then rolled into 13 higher-order components which ultimately feed into the four drivers.

[2] We are indebted to Ravi Shankar Chaturvedi and his Digital Planet research team at The Fletcher School, Tufts University, for providing the Digital Intelligence Index dataset.

Figure 1.
Key Drivers of Digital Evolution

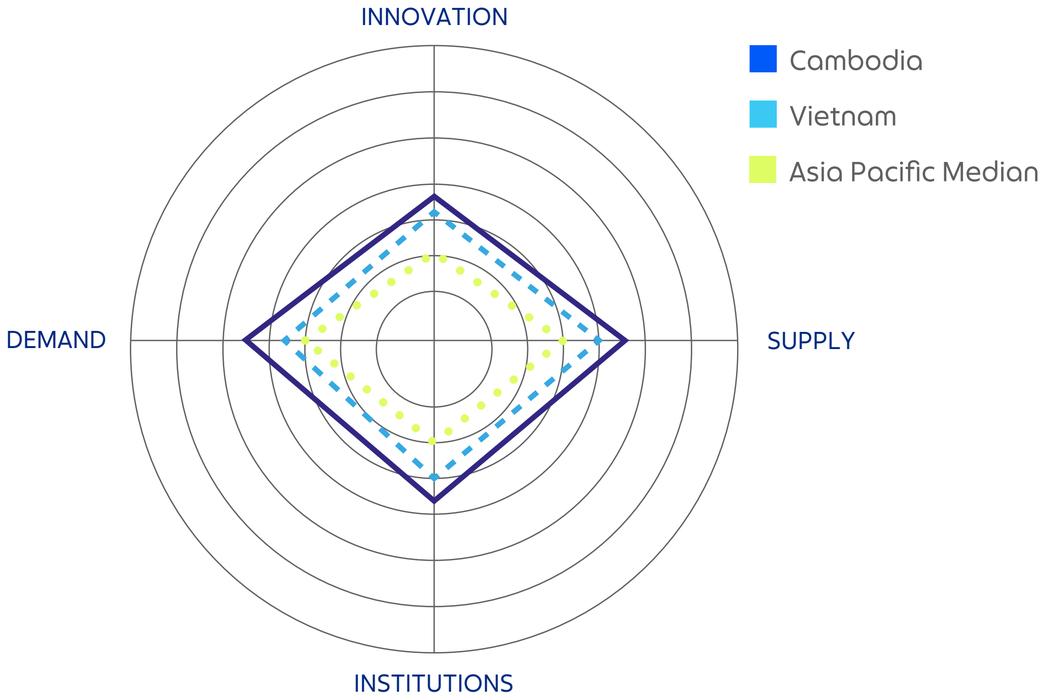
The Digital Evolution Index tracks a total of 160 indicators to measure the current state and pace of digitalization.



Source: https://digitalintelligence.fletcher.tufts.edu/methodology

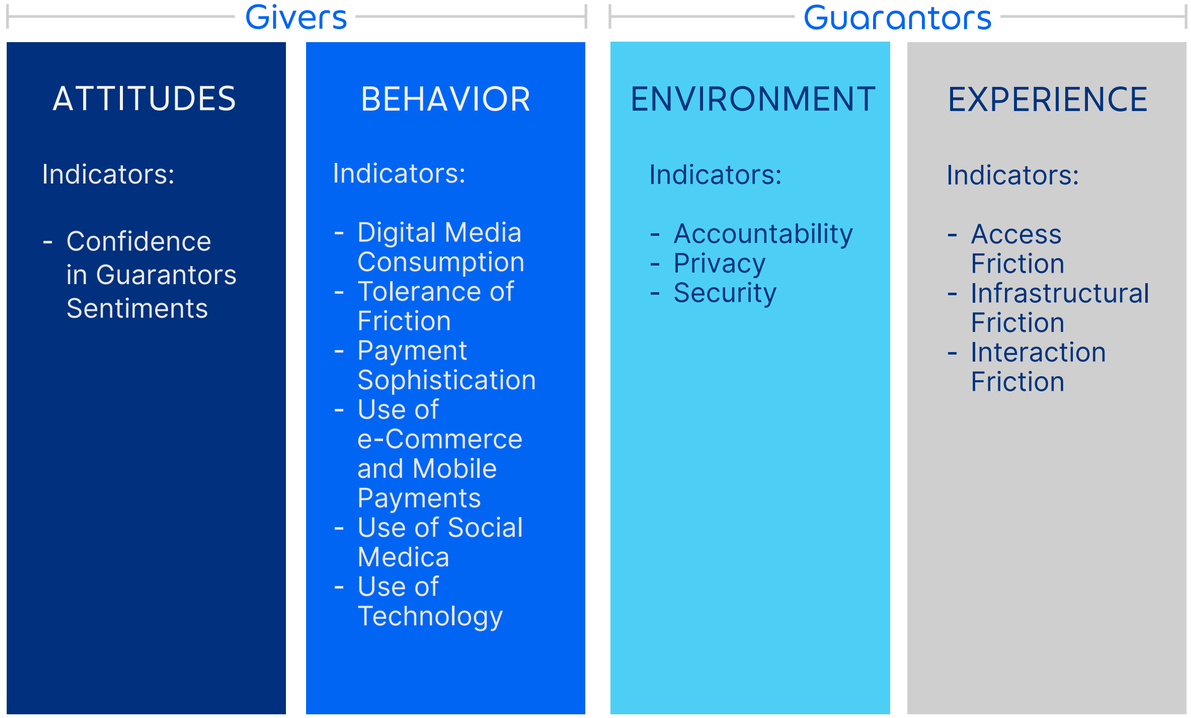
The index is presented in a dashboard (Digital Intelligence Index) and helps users track where countries are along their digital trajectory and what they need to do to improve digitalisation. For instance, the following compares the four key drivers of digital evolution between Vietnam and Cambodia:

Figure 2.
Key Drivers of Digital Evolution (Example of Cross-Country Comparison)



A second index in the DII is the **Digital Trust Index**. The Digital Trust Index evaluates the performance of the givers (users, consumers, citizens) and guarantors (businesses and institutions) of digital trust in 42 economies across four key dimensions: environment and experience provided by the guarantors, attitudes and behaviour of the givers. These four elements comprise the major areas around which digital trust between the givers and guarantors interact and revolve.

Figure 3.
Drivers of Digital Trust



Digital Intelligence Index is a collaborative research initiave of The Fletcher School at Tufts University and Mastecard.

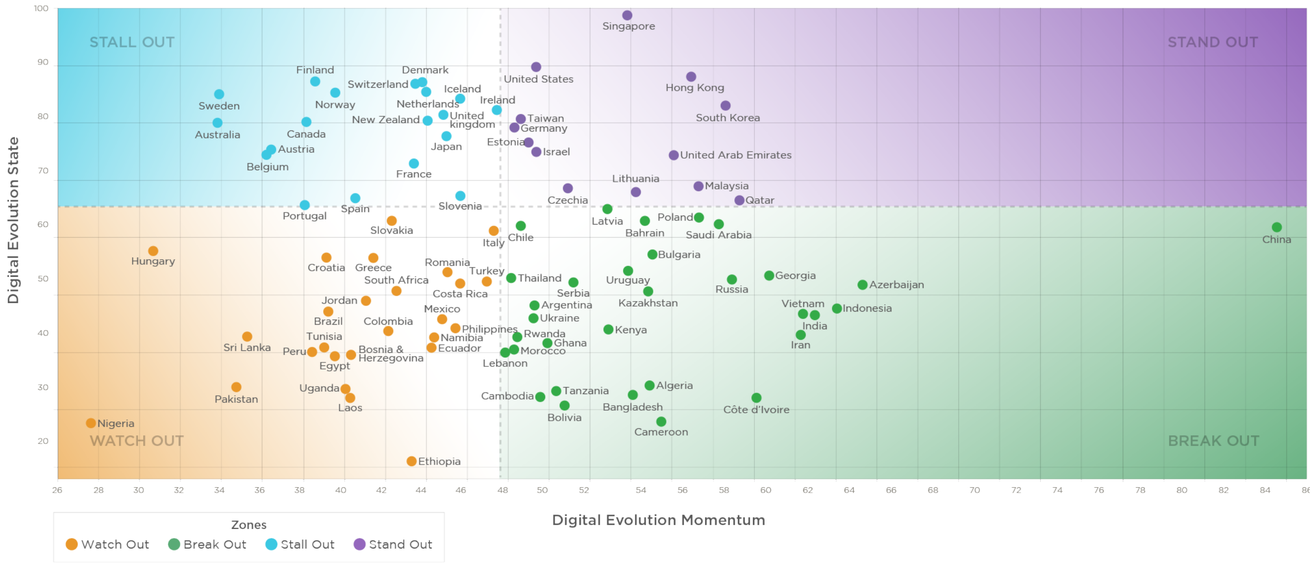
Digital Evolution: State & Momentum

In addition, the DII measures both the current state of digitalisation as well as the pace of digitalisation. DII classifies economies into four quadrants (Figure 4).

- Watch Out (low current state and low momentum)
- Stall Out (high current state and low momentum)
- Stand Out (high current state and high momentum)
- Break Out (low current state and high momentum)

This enables countries to assess the competitiveness of their economy against other countries. Many Southeast Asian countries are in the Stand Out and Break Out zone. In particular, Singapore and Malaysia are considered Stand Out countries, while Thailand, Vietnam and Indonesia are in the Break Out category. The Philippines, however, is in the Watch Out zone.

Figure 4.
Digital Evolution: State & Momentum



Digital Intelligence Index is a collaborative research initiative of The Fletcher School at Tufts University and Mastercard.

Source: https://digitalintelligence.fletcher.tufts.edu/methodology

E. Digital Gender Gap

Recognizing that significant gender data gaps exist, the Digital Gender Gap initiative uses big data from Facebook to track global gender gaps in internet and mobile access[3]. Current data on internet and mobile access are available but they cover very few countries, and it is infrequently updated[4]. As Facebook users are available for more countries than statistics, this index expands the geographical coverage of gender measures.

Using these monthly data, we could better track digital gender gaps and answer questions such as: in which countries are women most "invisible" online and are left behind by the digital revolution?

Data on the estimated number of Facebook users disaggregated by age and gender as well as the type of device used to access Facebook were retrieved for 193 countries using Facebook's marketing API. This data is used to compute the "**Facebook Gender Gap Index**". This index is highly correlated with statistics on internet (from the ITU) and mobile phone gender gaps (from the GSMA) collected via surveys, for which data is available.

$$\text{Facebook Gender Gap Index} = \frac{\text{female with characteristics} \,/\, \text{male with characteristics}}{\text{female population} \,/\, \text{male population}}$$

The numerators are for instance female or male by age (> 18 years old) who use a mobile device. The denominator is from UN Population data used to correct for population imbalance. The data and methodology is discussed in detail in a paper by Fatehkia, Kashyap, and Weber (2018).

On its website, two measures of Gender Gap are provided: 1) Internet Gender Gap and 2) Mobile Gender Gap. Both measures are female-to-male ratios of gender-specific internet penetration and lie in the range of 0 to 1. Values of 1 or close to 1 show that the gender gap has closed. For example, a value of 0.75 could be interpreted as a 25% gap between male and female internet use. For each measure of the Internet Gender Gap and Mobile Phone Gender Gap, there are various estimates using different models: online, offline, and combined. The models are discussed more in detail in the Digital Gender Gap website (https://www.digitalgendergaps.org/indicators).

As for the Facebook Gender Gap Index, they are used for the Internet Gender Gap – Online estimates and Mobile Gender Gap – Online estimates. The Digital Gender Gap also offers data visualisation tools for a quick snapshot of the global state of the internet gender gap and mobile gender gap on a monthly basis. The data is publicly available and can be downloaded through the Digital Gender Gap website.

[3] A collaboration between University of Oxford and Qatar Computing Research Institute.

[4] Internet gender gap data is available from International Telecommunications Union (ITU) and mobile phone gender gap is available from Global Systems for Mobile Communication Associations (GSMA) and collected via surveys.

Chapter 3

Fintech Activities: Tracking the Size, Scope and Evolution

As the previous chapter detailed relevant data sources for fintech, it is also important to track the dizzying array of fintech activities as the technology continues to evolve. This is to gain a better appreciation of the development of digital financial services over time. The fintech indicators already incorporate some of these activities such as digital payments, but there are also other forms of services that can help promote financial inclusion.

The Global Fintech Ecosystem Atlas

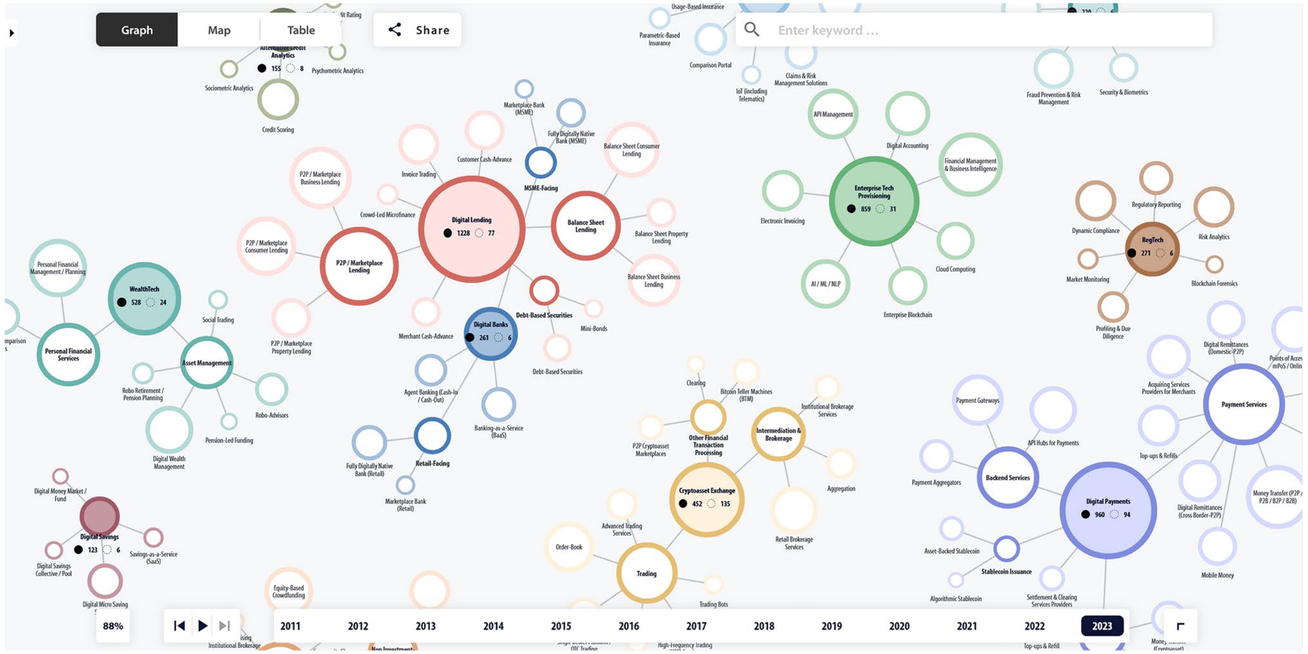
A useful source to tap is the Cambridge Centre for Alternative Finance's Global Fintech Ecosystem Atlas[5]. It is an online, user-friendly interactive resource that allows users to view and compare a visual representation of the fintech ecosystem from year to year. It also allows users to filter by type of fintech, search by market segments and organisations and view how the companies / volumes change over time. Data such as the volume of digital lending by country, by year can be downloaded as well. Figure 6 is a snapshot of the Fintech Ecosystem Atlas.

The atlas includes a range of fintech activities including: digital payments (including digital banks and payment services), digital savings, digital capital raising, digital advise (wealth tech, asset management), digital custody, digital identity, insure tech, regulatory tech, enterprise tech provisioning (API management, cloud computing, artificial intelligence / machine learning / natural language processing), crypto assets (including mining), and alternative credit analysis.

Since the database is built on a collaborative model, users can also contribute to the database by submitting updated data on the evolving financial services ecosystem.

[5] We would like to thank the Cambridge Centre for Alternative Finance for allowing us to cite and show the screenshot for the Global Fintech Ecosystem Atlas.

Figure 6.
The Global Fintech Ecosystem Atlas, 2022



Source: Cambridge Fintech Ecosystem Atlas

Chapter 4

The Way Forward

The databases discussed above contain a rich source of information that is global and multi-dimensional. One key message of this note is to raise awareness on the availability of these global datasets. For researchers interested in the Southeast Asia markets, these datasets contain the relevant information.

Analysts researching fintech and financial inclusion should first consider tapping the datasets available before collecting their own data. Consumer surveys, no matter how well constructed, do not have the reach and scale of global surveys. They tend to have a smaller sample size and are collected only as a snapshot. These might not be useful for monitoring progress over time.

The Way Forward

Using the Global Findex as an example, an indicator such as the percent of women using digital payments to pay and receive bills is useful if you are interested in the adoption of digital payments by women, how it evolves over time, and across different countries. A one-off consumer survey collected at a point in time would be less useful.

There will always be data gaps and the type of data gaps very much depends on the objectives of the researchers. One aspect that can be a useful resource in fintech, for example, is monitoring financial stability. From this perspective, fintech platforms collect a rich amount of data that should be shared to help monitor financial risks. The following list of indicators would be useful to fill the gaps for monitoring financial stability. See Example 1.

This is just one example of key research areas that can be further improved by data. Depending on the focus, researchers may develop their own framework and come up with other key indicators that should be collected to better understand fintech and financial inclusion.

In any case, fintech and financial inclusion research continues to develop. As technology progresses, there will be more areas that would need more understanding and research in order for governments to have evidence-based policy making. The aim of this compendium is to offer a starting point of what currently exists, with the goal of encouraging more research in this field.

Example 1. Monitoring Financial Stability

Fintech Platforms

Technology investments in fintech
Profitability of fintech companies
Cost to serve customers
Cost to acquire customers
List the number of key third-party dependencies (outsourcing)

User Engagement

Frequency of visits to the site
Number of clicks, length of time spent on the site
Volume of transactions
Value of transactions

Customer Profile

Above data on user engagement disaggregated by age and gender

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